

Dolores Beasley  
Headquarters, Washington  
(Phone: 202/358-1753)

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## **NASA SELECTS INVESTIGATIONS FOR SOLAR DYNAMICS OBSERVATORY**

NASA has selected three proposals for implementation for the Solar Dynamics Observatory (SDO) mission. The SDO is the first in a series of missions in the Living With a Star (LWS) Program. SDO flight instruments will be flown on a NASA-supplied Sun-pointing spacecraft in geosynchronous orbit that NASA intends to launch in August 2007 for a prime mission of five years.

"The Solar Dynamics Observatory is the cornerstone of the new Living with a Star program," said Dick Fisher, director of the Sun-Earth Connection Division in NASA's Office of Space Science in Washington. "The SDO mission is designed to provide new data concerning the nature and consequences of solar variability to humanity and will directly contribute to NASA's mission to understand and protect the home planet."

The LWS initiative addresses aspects of the Sun-Earth system that affect life and society. The primary goal of the SDO mission is to understand and, ideally, predict the solar variations that influence life on Earth and humanity's technological systems. SDO will do this by determining how the Sun's magnetic field is generated and structured and how this stored magnetic energy is converted and released into the heliosphere and geospace in the form of solar wind (a magnetized plasma), energetic particles, and variations in the solar brightness.

The three selected proposals were judged to have the best science value among the eight proposals submitted to NASA in January 2002 in response to the SDO Announcement of Opportunity. Each selected investigation will work with the SDO office at NASA's Goddard Space Flight Center (GSFC), Greenbelt, Md., to finalize the spacecraft's accommodation of the instrument sets. Total cost of the payload to NASA from development through five years of operation is about \$123 million. The SDO spacecraft is being provided by GSFC.

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The investigations selected by NASA for SDO are:

- Helioseismic and Vector Magnetic Imager (HVMi), as the prime SDO investigation will study the origin of solar variability by characterizing and developing an understanding of Sun's interior and the various components of its magnetic activity. Dr. Philip Scherrer of Stanford University, Palo Alto, Calif., is the principal investigator. Instrumentation will be developed with the assistance of a Lockheed Martin team.
- Solar Heliospheric Activity Research and Prediction Program (SHARPP) uses two instruments: an Atmospheric Imaging Assembly (AIA) and a white light coronagraph (WCI). SHARPP's instruments will study the dynamic solar atmosphere, linking the HVMi interior and surface measurements to the overlying corona to learn how and why the Sun's atmosphere varies. With unprecedented time and spatial resolution, SHARPP should develop space weather predictions for the terrestrially important phenomena. Dr. Russell Howard of the Naval Research Laboratory, Washington, D.C. will lead a large international team as the SHARPP principal investigator.
- Extreme Ultraviolet Variability Experiment (EVE) will measure the solar extreme ultraviolet (EUV) irradiance with great detail and precision and apply physics-based modeling to advance understanding of the EUV irradiance variations based on the Sun's magnetic features. Solar EUV energy heats the upper atmosphere of the Earth. The EVE investigation is lead by Dr. Thomas Woods from the Laboratory for Atmospheric and Space Physics of the University of Colorado, Boulder, Colo.

"Both government and civilian users of space weather data have expressed keen interest in the new information anticipated from the SDO mission," Fisher said.

Living With a Star is part of the Sun-Earth Connection Division within NASA's Office of Space Science, Washington. The SDO mission brings together teams from university, industry, and NASA Center communities and is a multilateral international collaboration involving participants from Belgium, Denmark, France, Germany, Italy, Japan, England, and the United States.

For more information on NASA's Living With A Star program, visit:

<http://lws.gsfc.nasa.gov/>